

RECLAMATION

Managing Water in the West

Water and Energy Nexus

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Bureau of Reclamation



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Western United States – Early 1900's



Grand Valley Project,
Colorado

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Western United States – Early 1900's



Boise Project, Idaho

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The West's Population

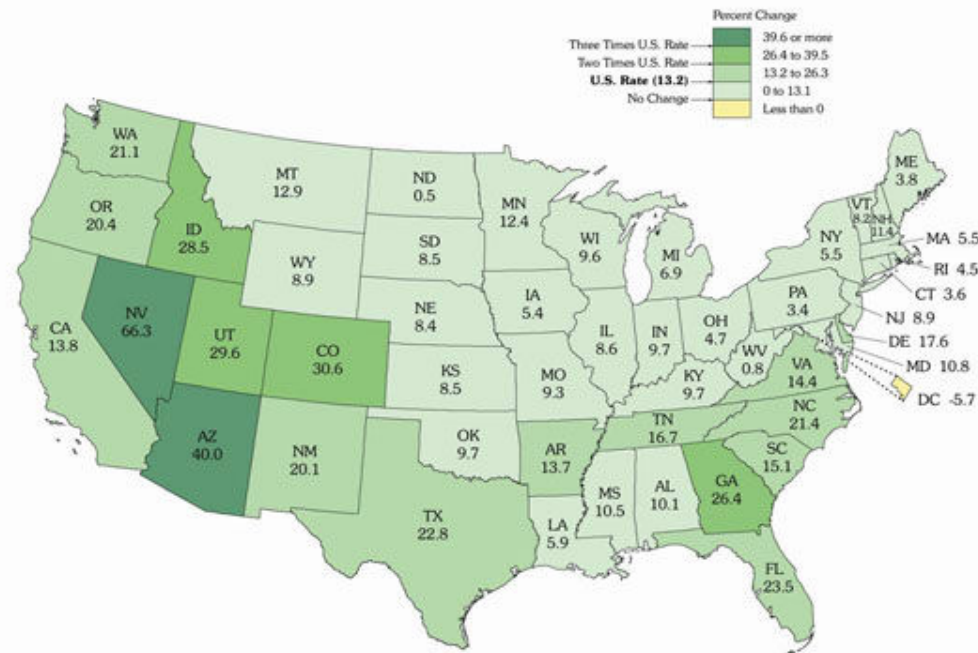
- 9 Of 10 Fastest Growing States Are In The West
- California Is The Nation's Most Populous State
- Biggest Growth Is In Nevada And Arizona
- Riparian Corridors Are Key Growth Centers

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Population Growth

Demographic Changes: Population Has Grown Fastest in the West, Particularly in the “Public Land States”

Percent Change in Resident Population for the 48 States and the District of Columbia: 1990 to 2000



- Darker areas denote faster growth rates.

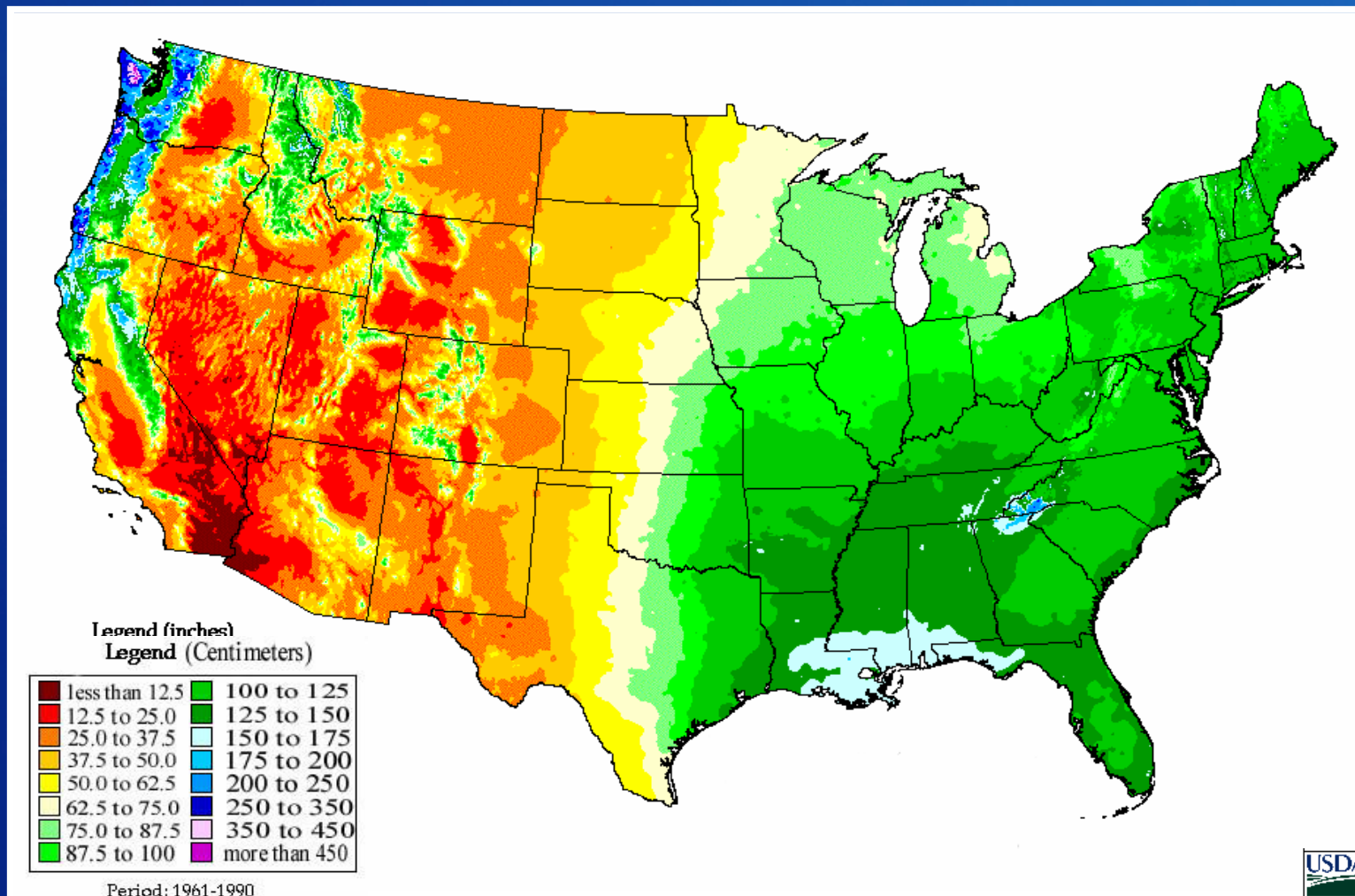
- Nevada (66%) and Arizona (40%) lead the nation.

- Intermountain states average about 30%.

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Annual Average Precipitation



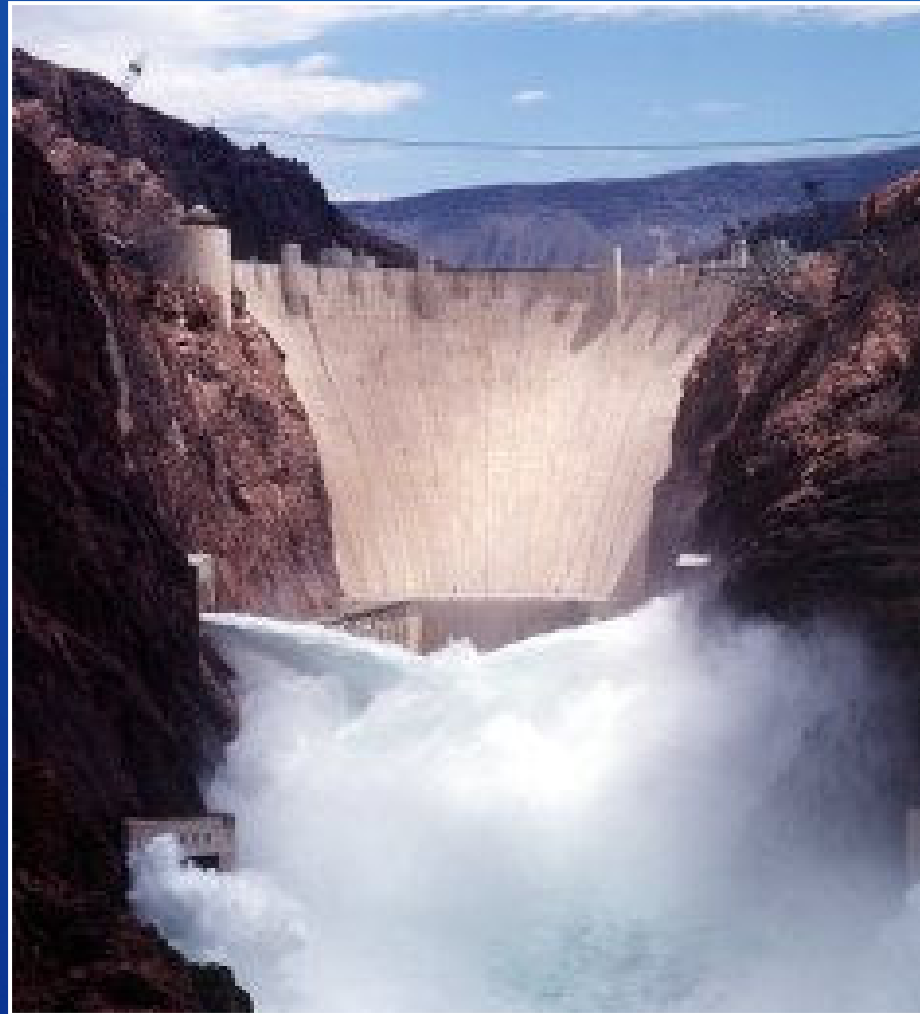
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348 Dams

**58 Hydroelectric
Plants**

**55,000 Miles of
Canals**

**\$2B in Hydro
Assets**



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Hydropower

- **Second Largest Hydroelectric Producer in the U.S.A.**
- **Fifth Largest Electric Utility In The 17 Western States**
- **Produce 42B kwh Annually**
- **192 Generating Units**



Hoover Dam - Nevada Generators

C45-300-000039

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Pacific Northwest Region



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Mid-Pacific Region



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Region Upper Colorado



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Lower Colorado Region



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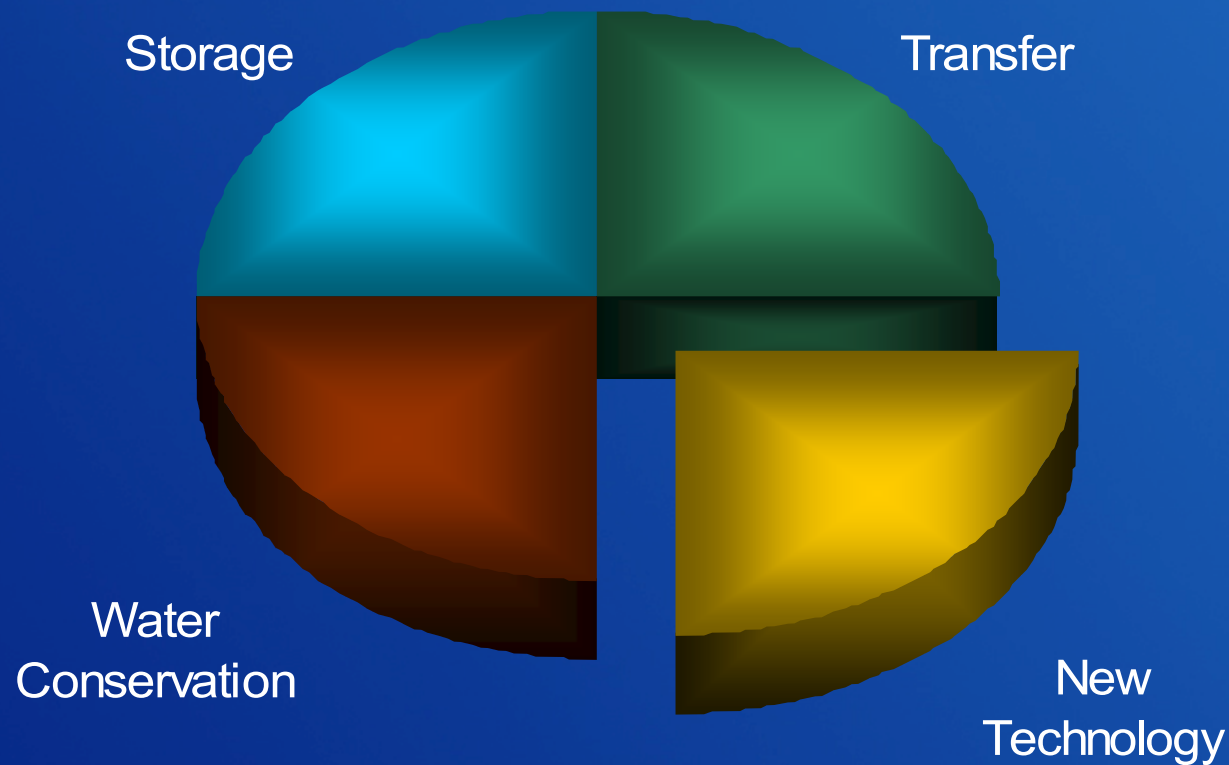
Great Plains Region



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Vision

New Technology for New Water Supplies



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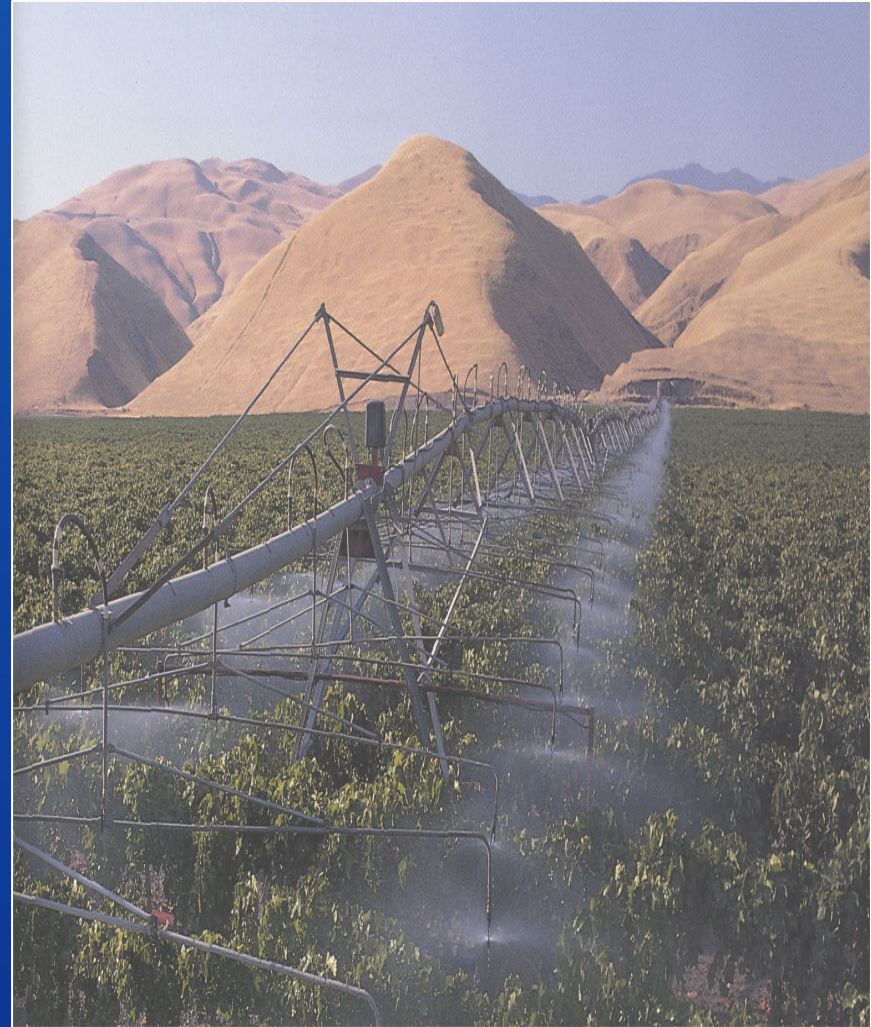
What is the Water used for ?

- agricultural irrigation
- municipal and industrial
- hydropower
- fish and wildlife
- recreation
- flood control

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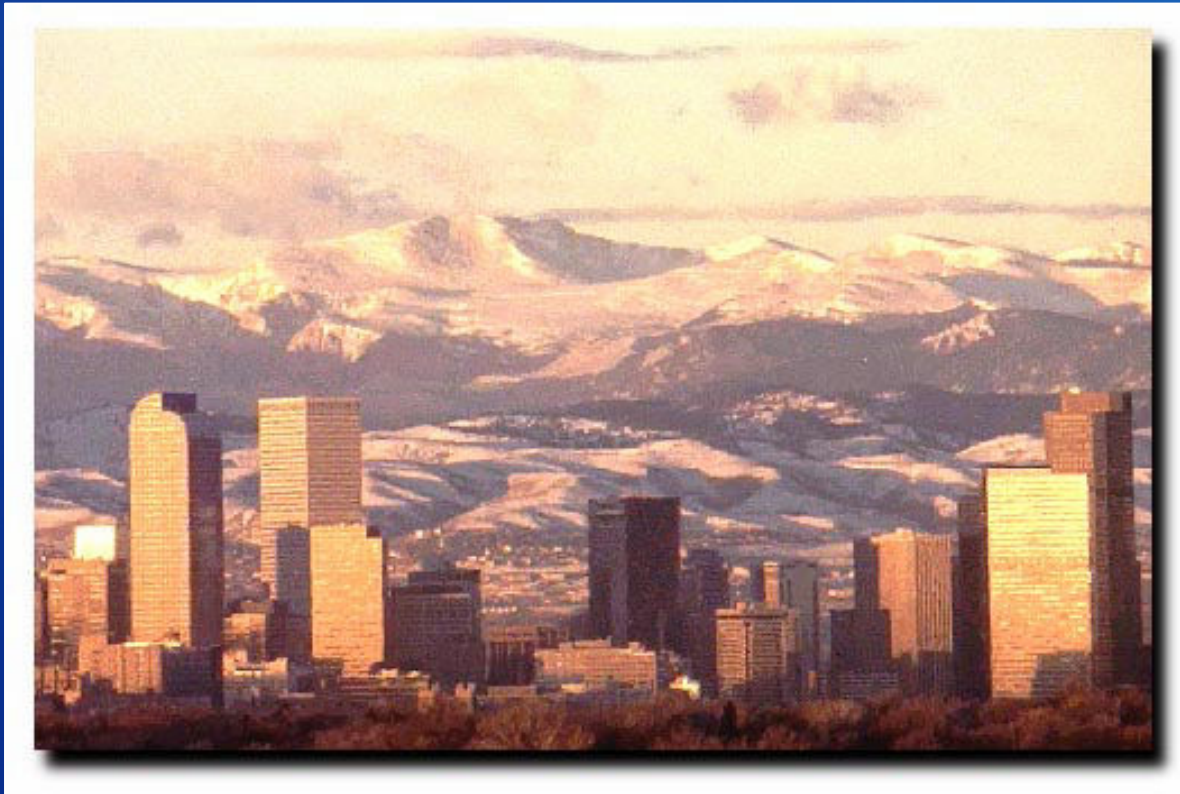
Agricultural Irrigation

- Provides irrigation water to 20% of U.S. Western farmers
- Reclamation Projects enable farmers to produce 60% of the nation's vegetables and 25% of it's fruit and nut crop



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Municipal And Industrial



**Supplies About 10 Trillion Gallons Of Water
To 35 Million People Every Year**

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Flood Control



- **Regulating Flood Waters Has Prevented Destruction Of Cities And Agricultural Lands**
- **Billions Of Dollars Have Been Saved In Flood Damage Since 1950**

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Recreation

- About 90 Million Visitors A Year To Reclamation Projects And Lands

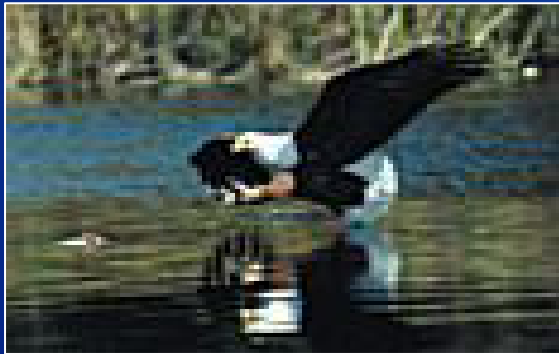


- 308 Recreation Sites That Feature Fishing, Boating And Camping

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Fish And Wildlife

- Enhance Fish And Wildlife Habitat



- Protect Endangered Species

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Mission Statement

To manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Western Water Rights

- First in Time – First in Right
- Federal Government cannot exercise unilateral control
- Each State has its own defined law

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State Water Rights

- Respect and Follow State Law
- Includes Adjudication of Water Rights
- Includes Reserved Water Rights for Native Americans

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Blue Books

- *The Federal Reclamation and Related Laws Annotated*
 - Intended as a legal handbook.
 - Statutes, compacts, and treaties that directly affect the program responsibilities of Reclamation, together with other selected laws that relate to the program.
 - Annotations of court decisions and agency opinions that interpret such laws and are deemed relevant to the program and activities of Reclamation.
 - Four volumes and 2 supplements, through 1998.

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Reclamation Laws

- **Reclamation does not have an “Organic Act” series of laws - both general and specific**
- **General laws – Two significant pieces of legislation: 1920 Act and 1939 Act**

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- **Policy objective: To extend agriculture into regions where a lack of water had been a barrier to establishing family-sized farms.**
- **The original intent was that creation of a Reclamation revolving fund would make the program self-supporting. Monies in the fund were made available to the Secretary of the Interior for construction of projects.**
- **Projects were single-purpose, irrigation only.**

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1920 Act

- **Authority to include power, M&I, flood control, and other purposes in project planning.**
- **introduced the ability to pay concept**
- **introduced the concept of water service and repayment contracts**
- **provides for a project development period of up to 10 years**

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Project Specific Legislation

Reclamation law is interspersed with project specific legislation which generally provide authority and direction for construction, operation and maintenance specific to a project

- A few of the more commonly known include:**
 - Boulder Canyon Act**
 - Colorado River Storage Project**
 - Central Valley Improvement Act**

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Reclamation's Power Program

- 58 power plants with 14,746.4 megawatts of capacity
- 194 generating units
- 42 billion kilowatt hours generated (enough to serve 4 million homes)
- 2nd largest hydropower utility in United States

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Reclamation Hydropower

Large

- Grand Coulee (6,809 MW)
- Hoover (2,078 MW)
- Glen Canyon (1,304 MW)
- Shasta (663 MW)

Small

- Lewiston (0.35 MW)
- Pilot Mtn. (1.6 MW)
- Shoshone (3 MW)
- Boise River Diversion (3.4 MW)
- Stampede (3.6 MW)

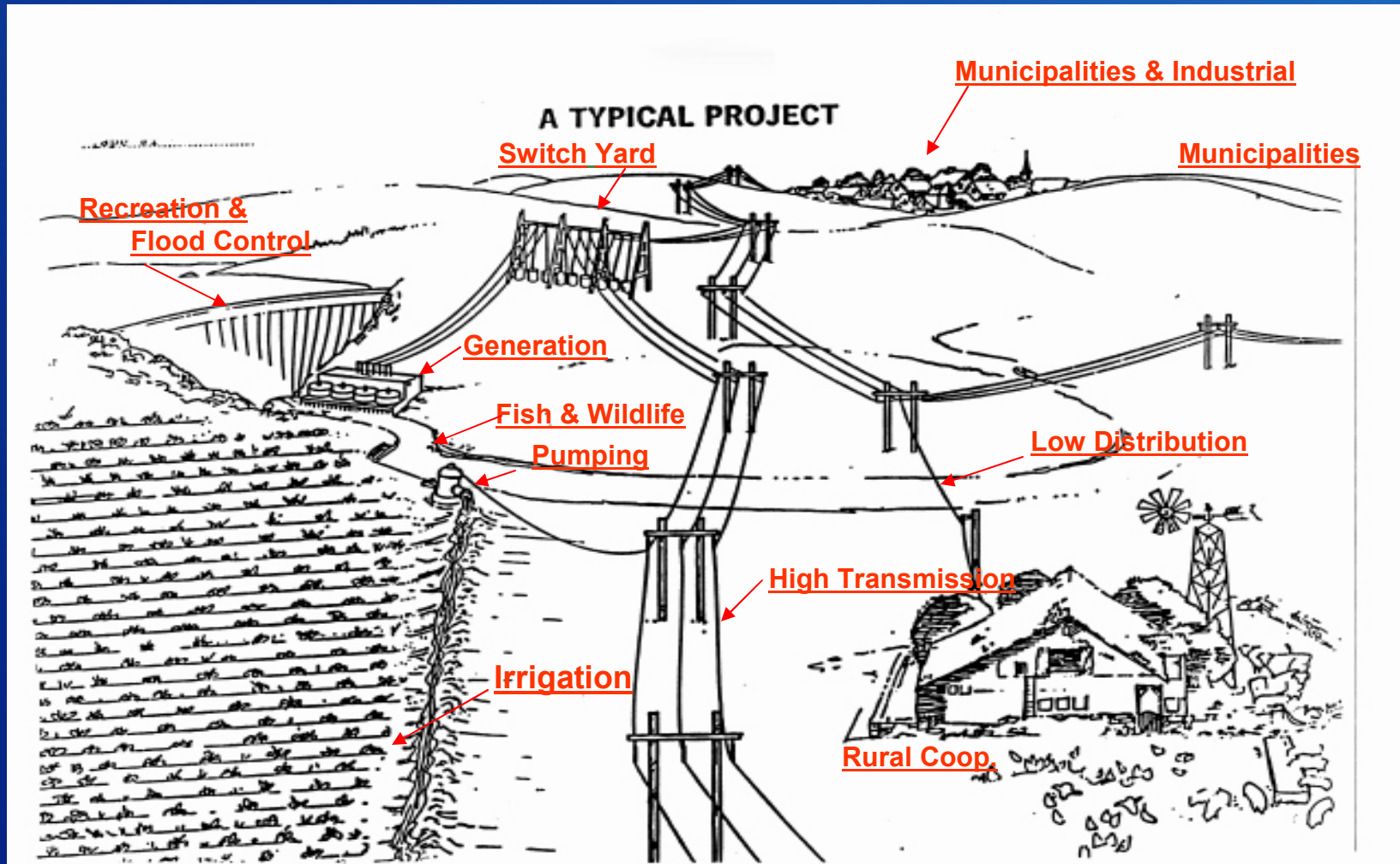
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Marketing Reclamation Hydropower

- DOE Organization Act of 1977 transferred marketing responsibilities to WAPA and BPA.
- Firm power sold to preference power customers (rural co-ops, municipalities, irrigation districts, federal & state agencies, and Native American tribes)
- Power sold only at rates necessary to cover costs

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A Typical Project



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Strengths

- Highly qualified employees
- Solid power plants and water facilities
- Maintenance standards & practices
- Long history of meeting power & water commitments
- World - class expertise

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Long Term Viability of Energy and Water Infrastructure

- Power and Facility Reviews of O&M
- Preventive Maintenance Standards
- Comprehensive Asset Management Strategy Based in Condition Assessment
- WECC Reliability Management System and NERC Self-Certification
- Disciplined Succession Planning and Knowledge Transfer

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Additional Hydropower Opportunities

- Since 1978, Reclamation Upgrading Practices Have Added 1800 MW of Capacity
- Energy Policy Act Mandated Two Studies
- Section 1840 Report Completed & Delivered to Congress
- Section 1834 Report Underway
 - Efficiency, Upgrade & Refurbishment
 - Hydropower Additions at Existing Reclamation Facilities

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Reclamation Builds Partnerships

- Corps of Engineers
 - PMA
 - Stakeholders
 - Tennessee Valley Authority
 - WAPA
 - BPA
-
- New Senior Level Liaison Position

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